AMENDMENTS TO THE SPECIFICATION

In the Specification

Please substitute the following amended paragraph(s) and/or section(s) (deleted matter is shown by strikethrough and added matter is shown by underlining):

Page 1, line 2, please add the following header:

Field of the Invention

Page 1, line 15, please add the following header:

Background of the Invention

Page 2, line 4 – line 12, please amend the paragraph as follows:

For a high accuracy of a laser surgery method, it is indispensable to guarantee high localization of the effect of the laser beams and to avoid collateral damage to adjacent tissue as far as possible. It is, therefore, common in the prior art to apply the laser radiation in a pulsed form, so that the threshold value for the power density of the laser radiation required to cause an optical breakthrough is exceeded only during the individual pulses. In this regard, US 5,984,916 clearly shows that the spatial extension of the optical breakthrough (in this case, of the generated interaction) strongly depends on the pulse duration. Therefore, [[high]] precise focusing of the laser beam in combination with very short pulses allows [[to]] placement of the optical breakthrough in a material with great ~~point~~ accuracy.

Page 2, line 19 – line 29, please amend the paragraph as follows:

US 5,984,916, mentioned above, as well as US 6,110,166 describe methods of the above-mentioned type for producing cuts by means of suitable generation of optical breakthroughs, so that, ultimately, the refractive properties of the cornea are selectively influenced. A multitude of optical breakthroughs are joined such that a lens-shaped partial volume is isolated within the cornea. The lens-shaped partial volume which is separated from the remaining corneal tissue is then removed from the cornea through a laterally opening cut. The shape of the partial volume is selected such that, after removal, the shape and the refractive properties of the cornea are thus modified so as to have the desired correction of the visual deficiency. The cuts required here are curved, which makes a three-dimensional adjustment of the focus necessary. Therefore, a two-dimensional deflection of the laser radiation is combined with simultaneous adjustment of the focus in a third spatial ~~direction~~ dimension.

Page 2, line 31 – line 37, please amend the paragraph as follows:

The two-dimensional deflection of the laser radiation and the focus adjustment are both ~~equally decisive~~ important for the accuracy with which the cut can be produced. At the same time, the speed of adjustment, which is achievable thereby, has an effect on the speed at which the required cut can be produced. Generating the cuts quickly is desirable not only for convenience or in order to save time; bearing in mind that movements of the eye inevitably occur during ophthalmological operations, quick generation of cuts additionally contributes to the optical quality of the result thus achieved and avoids the requirement to track eye movements.

Page 3, line 3, please add the following header:

Summary of the Invention

Page 3, line 14 – line 22, please amend the paragraph as follows:

Thus, according to the invention, to generate the optical breakthroughs, paths are used which are based on contour lines of the cut to be produced. Said contour lines refer to that spatial direction of the system in which the slowest shifting speed is given. This allows ~~to keep~~ maintenance of the focus almost unchanged in this spatial direction over a longer period, and the higher shifting speed in the other two spatial directions can be utilized without limitation. As a result, quick production of a cut is obtained. The contour lines can be conveniently obtained by cutting the curved cut in a plane perpendicular to the first spatial direction. The more exactly the planes of the contour lines are perpendicular to the first spatial direction, the more constant the shifting in the first spatial direction can be kept during one contour line.

Page 4, line 4 – line 9, please amend the paragraph as follows:

The contour line set will depend on the topography, i.e. the curvature of the cut. For a spherically curved cut, concentric circular contour lines are obtained. Since in ophthalmic corrections some astigmatism has to be corrected in most cases as well, a spherically curved cut will be rather an exception, whereas an ellipsoid or toroidal surface will be generally present. For such an ellipsoid surface, the contour lines are formed as (favorably concentric) ellipses. Ellipticity is preferably between 1.0 and 1.1, or even 1.2.

Page 4, line 15 – line 17, please amend the paragraph as follows:

The ellipticity of the ellipses or of the ellipsoid spiral, respectively, may depend on the shape of the corneal surface. Ellipticity is understood to be the ratio of the ~~great~~ major axis of an ellipse to its ~~small major~~ minor axis.

Page 7, line 14, please add the following header:

Brief Description of the Drawings

Page 7, line 18 – line 36, please amend the paragraphs as follows:

Figure 1 ~~shows~~ is a perspective view of a patient during a laser-surgical treatment with a laser-surgical instrument;

Figure 2 ~~shows~~ depicts the focusing of a ray bundle onto the eye of the patient in the instrument of Figure 1;

Figure 3 ~~shows~~ is a schematic representation explaining a cut generated during laser-surgical treatment with the instrument of Figure 1;

Figure 4 ~~shows~~ depicts a deflection apparatus of the laser-surgical instrument of Figure 1;

Figure 5 ~~shows~~ depicts an exemplary contour line projection image, which is used to control the deflecting unit of Figure 4;

Figure 6 ~~shows~~ depicts a detail of a contour line image similar to that of Figure 5 in order to explain the transition between subsequent contour lines;

Figure 7 is similar to Figure 6, with a further possible transition between contour lines;

Figures 8a and 8b ~~show~~ depict a further example of a contour line image, including associated control functions for the deflecting unit of Figure 4;

Figure 9 ~~shows~~ is a top view of a cut region as an ophthalmic operation for correction of a visual defect is being carried out;

Figure 10 is a representation similar to that of Figure 2, using a contact glass;

Figure 11 ~~shows~~ depicts parameters relevant to determining the contour lines, and

Figures 12 and 13 ~~show~~ depict the parameters of Figure 11 with and without a contact glass.

Page 8, line 1, please add the following header:

Detailed Description of the Invention

Page 8, line 7 – line 12, please amend the paragraph as follows:

For this purpose, as schematically shown in Figure 2, the laser-surgical instrument 2 comprises a source of radiation S whose radiation is focused into the cornea 5 1. A visual deficiency in the eye 1 of the patient is remedied using the laser-surgical instrument 2 to remove material from the cornea 5 so as to change the refractive characteristics of the cornea by a desired amount. In doing so, the material is removed from the corneal stroma, which is located beneath the epithelium and Bowman's membrane and above Descemet's membrane and the endothelium.

Page 8, line 32 – page 9, line 5, please amend the paragraph as follows:

On the one hand, the focus shift according to one embodiment is effected by means of the deflecting unit 10, schematically shown in Figure 4, which deflects the laser beam 3 along two mutually perpendicular axes, said laser beam 3 being incident on the eye 1 on a major axis of incidence H. For this purpose, the deflecting unit 10 uses a line mirror 11 as well as an image mirror 12, thus resulting in two spatial axes of deflection ~~which are located behind each other~~. The point where the main beam axis and the deflection axis cross is then the respective point of deflection. On the other hand, the telescope 6 is suitably adjusted for focus displacement. This allows shifting of the focus 7 along three orthogonal axes in the x/y/z coordinate system schematically shown in Figure 4. The deflecting unit 10 shifts the focus in the x/y plane, with the line mirror allowing focus shift in the x-direction and the image mirror allowing adjustment of the focus in the y-direction. In contrast thereto, the telescope 6 acts on the z-coordinate of the focus 7.